* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the automatic manuscript transport device provided to image formation equipments, such as a copying machine, facsimile apparatus, and printer equipment. In detail It is related with the automatic manuscript transport device equipped with the specification-part material which regulates that the feed member which feeds paper to the manuscript bundle laid on the manuscript installation base, and is conveyed to a separation means, and the point of the manuscript laid in the manuscript installation base contact, and a manuscript bundle moves to the conveyance direction downstream of a manuscript rather than the predetermined location on a manuscript installation base.
[0002]
[Description of the Prior Art] If it is in the automatic manuscript transport device (henceforth ADF) which is one of the image formation equipment and which is carried in a copying machine recently, in case the manuscript bundle which becomes a manuscript tray from two or more manuscripts is set, in order to make the set location of this manuscript bundle intelligible, or in order to prevent the set mistake of a manuscript, the stopper pawl which tells the set location of a manuscript is formed.
[0003] The point of a manuscript regulates that a manuscript bundle moves to the conveyance direction downstream of a manuscript rather than the set location on a manuscript tray in contact with the time of this stopper pawl being formed in a manuscript tray possible [contact and isolation], and contacting a manuscript tray. It is isolated from a manuscript tray so that it may not become the hindrance of manuscript feeding, when a manuscript bundle is set and a copy start button is operated, and when all feedings of the manuscript laid in the manuscript tray are completed, a manuscript tray is contacted again.
[0004] On the other hand, when a stopper pawl is isolated from a manuscript tray, there is a pickup roller which feeds paper to a manuscript from a manuscript tray in contact with a manuscript, in ADF of the type which dissociates from the upper part and feeds paper to a manuscript bundle, this pickup roller is prepared up to a manuscript tray, and the contact and isolation of it are attained at the manuscript bundle. It is [as opposed to / usually / since the structure of a manuscript tray becomes complicated in order that a manuscript tray may move, if it is in this thing, although there are some which move to the pickup roller side which the manuscript tray suspended to the pickup roller arranged in such the upper part in this manuscript tray upper part, and contact / a manuscript tray] made to do contact and isolation of a pickup roller.
[0005] ON/OFF actuation of the stopper pawl and pickup roller which were mentioned above is carried out so that it may usually be contacted and isolated by a separate solenoid etc. at a manuscript tray. As this reason, the pickup koro is moved to the location which contacts a manuscript bundle at the time of feeding of a manuscript. It prevents that the manuscript which isolates and follows from a manuscript bundle in case a manuscript is separated by separation means, such as a separation belt and reverse koro, is separated. As opposed to carrying out frequently actuation contacted and isolated to a manuscript bundle as a manuscript bundle is contacted again, in order to separate the manuscript bundle which

follows after separation of the manuscript to precede is completed A stopper pawl is moved to the location which contacts a manuscript tray at the time of the set of a manuscript. It is easy to control the direction driven by the separate solenoid etc. from there being dramatically little actuation contacted and isolated on the manuscript tray as it is moved to the location isolated from the manuscript tray after feeding of a manuscript is started until it ends.

[0006]

[Problem(s) to be Solved by the Invention] However, if it was in conventional ADF, since the stopper pawl and the pickup roller were driven by the separate driving means, while components mark will increase, only the part had the problem that cost will increase. Then, as this invention drives a feed member and specification-part material by one driving means, it aims at offering the automatic manuscript transport device which can prevent that a manufacturing cost increases while it can prevent that the components mark of a driving means increase.

[0007]

[Means for Solving the Problem] In order that invention according to claim 1 may solve the above-mentioned technical problem, it is prepared in the manuscript bundle laid on the manuscript installation base up to a manuscript bundle so that it may be contacted and isolated. The feed member which feeds paper to this manuscript bundle and is conveyed to a separation means when this manuscript bundle is contacted, The specification-part material to which the point of a manuscript regulates that a manuscript bundle moves to the conveyance direction downstream of a manuscript rather than the predetermined location on a manuscript installation base in contact with the time of being prepared in said manuscript installation base possible [contact and isolation], and contacting a manuscript installation base, One driving means driven in a ******** automatic manuscript transport device so that said feed member and specification-part material may be moved to contact / isolation location is established. This driving means It is prepared in the outgoing end of each system of a drive motor, the transfer device in which the driving force of this drive motor is divided and transmitted to two lines, and this transfer device, and is characterized by having the migration member which moves said feed member and specification-part material to contact / isolation location according to actuation of each system of this transfer device.

[0008] In that case, it can prevent that can set a driving source to one as a transfer device divides the driving force of one drive motor into two lines and it transmits to a feed member and specification-part material, and prevent that the components mark of a driving means increase, and the manufacturing cost of an automatic manuscript transport device increases. While the driving force of this drive motor is transmitted in invention according to claim 1 in case said drive motor rotates one system of said transfer device normally in order that invention according to claim 2 may solve the above-mentioned technical problem It is characterized by constituting the system of another side of said transfer device so that the driving force of this drive motor may be transmitted in case said drive motor is reversed, and switching contact / isolation location of said feed member and specification-part material in connection with the forward counterrotation of this drive motor. [0009] In that case, since a feed member and specification-part material can be driven in connection with the forward counterrotation of a drive motor, a feed member and specification-part material can be driven with the easy configuration which has one drive motor. Invention according to claim 3 is set to invention according to claim 2, in order to solve the above-mentioned technical problem. Said transfer device The location which branches the driving force of said drive motor for each system at least is equipped with the gearing of a couple which has an one-way clutch. In case said drive motor rotates normally, while rotating said gearing's one side and transmitting driving force to either a feed member and specification-part material, it is characterized by making it not transmit driving force to any of a feed member and specification-part material, or another side, without rotating a gearing's another side.

[0010] In that case, it can switch transmitting the driving force of a drive motor to a feed member or specification-part material by using the gearing which has an one-way clutch as a transfer device, a driving means can be simplified, and only the part can reduce the manufacturing cost of an automatic manuscript transport device. in order that invention according to claim 4 may solve the above-mentioned technical problem -- claims 1-3 -- in invention given in any they are, it is characterized by preparing a

part of member which constitutes a transfer device until it results [from said drive motor] in said feed member on the predetermined conveyance member which is arranged near the feed member and feeds paper to a manuscript, and this alignment.

[0011] In that case, while being able to simplify the configuration of a driving means by it being arranged near the feed member and preparing a part of member which constitutes a transfer device on the existing conveyance member and this alignment, it can make it unnecessary to secure the excessive tooth space for installing a transfer device. Moreover, since the new member for supporting a part of transfer device becomes unnecessary, it can prevent that the feed path of a manuscript etc. is covered with a new member, and can prevent causing trouble to the activity which removes a jam manuscript from a feed path.

[0012]

[Embodiment of the Invention] Hereafter, the operation gestalt of this invention is explained based on a drawing. Drawing 1 -14 are drawing showing 1 operation gestalt of the automatic manuscript transport device concerning this invention, and show the example which carried the automatic manuscript transport device of this invention in the copying machine as image formation equipment. In addition, as image formation equipment, it is [other than a copying machine] applicable to facsimile apparatus, printer equipment, etc.

[0013] First, a configuration is explained. In drawing 1 and 2, 1 is a copying machine and contact glass 2 is formed in the top face of this copying machine 1. Moreover, the automatic manuscript transport device (only henceforth ADF) 3 is formed in the upper part of a copying machine 1, and this ADF3 is connected through the hinge which is not illustrated to a copying machine 1 so that contact glass 2 may be opened and closed.

[0014] The manuscript tray 4 as a manuscript installation base in which this ADF3 can lay the manuscript bundle P which consists of two or more manuscripts, A separation / feeding means 5 to convey the separated manuscript toward contact glass 2 after separating [each] one manuscript from the manuscript bundle laid in the manuscript tray 4, While making the exposure location on contact glass 2 convey and suspend the manuscript conveyed toward contact glass 2 by separation / feeding means 5 A carrying-in / taking-out means 6 to take out the manuscript which read ended with the reading means (a well-known exposure lamp, a mirror, a lens, CCD, etc.) of the copying machine 1 arranged under the contact glass 2 from contact glass 2, a delivery means 7 to deliver the manuscript taken out from the exposure location of contact glass 2 by carrying-in / taking-out means 6 to either of the 2nd paper output tray 9 arranged under the 1st paper output tray 8 which projects from the side of a copying machine 1, or the manuscript tray 4 -- since -- it is constituted. In addition, the 1st paper output tray 8 may be formed so that it may project from the side of ADF3. In addition, the image read and ** carried out by the reading means is imprinted by the recording paper with image formation means, such as a well-known photo conductor drum and a developer.

[0015] Separation / feeding means 5 consists of the call koro 10 (feed member), the feed belt 11, the reverse koro 12, the pull out actuation koro 13, the pull out follower koro 13a and 13b, the stopper pawl (specification-part material) 14, a manuscript set sensor 15, a pull out sensor 16, and a resist sensor 17. When the stopper pawl 14 is formed movable between the regulation location (contact location) which contacts the manuscript tray 4, and the evacuation location (isolation location) evacuated from the manuscript tray 4 and it is located in a regulation location, it regulates that the manuscript bundle P moves to the conveyance direction downstream rather than the predetermined location on the manuscript tray 4 in contact with the point of the manuscript bundle P.

[0016] Moreover, the call koro 10 is formed in the manuscript bundle P possible [contact and isolation], paper is fed to the manuscript located in the upper layer from the manuscript bundle P, and the feed belt 11 and the reverse koro 12 separate only the top manuscript from this manuscript bundle P. This separated manuscript is pinched by the pull out follower koro 13a and 13b which takes to the pull out actuation koro 13 and this, and is carried out the surroundings, is drawn out from the feed belt 11 and the reverse koro 12, and is conveyed toward contact glass 2.

[0017] And these call koro 10, the feed belt 11, the reverse koro 12, the pull out actuation koro 13, and

the stopper pawl 14 are driven with the 1st drive (driving means) 18 and the 2nd drive 19 which are shown in drawing 2 . The 1st drive 18 has the call motor (drive motor) 20 which consists of a stepping motor, as shown in drawing 2 -4, and it drives this call motor 20 by the Maine controller 21. The driving force of this motor 20 is transmitted to a gearing 23 through the belt 22 with which the gear tooth was formed in the inner circumference section from gearing 20a attached in the output shaft of a motor 20, and this gearing 23 is connected with the pickup input gearing 25 through the shank material 24. It has geared with the pickup driver 26 and the stopper gearing 27, an one-way clutch is built in these gearings 26 and 27, and this gearing 25 rotates only to an one direction with this one-way clutch. In addition, the gearing prepared in the location which branches for each system in the driving force of the drive motor (call motor 20) which these gearings 26 and 27 say by the claim deserves.

[0018] If the call motor 20 rotates among drawing 2 and 3 in the direction of CCW which is a clockwise rotation, the pickup driver 26 will rotate through a belt 22 and the pickup input gearing 25 counterclockwise (here, since the sense of drawing 3 and drawing 4 is objection, a hand of cut is explained based on drawing 2 and 3). At this time, as for the stop gearing 27, a revolution of the pickup input gearing 25 is not transmitted with an one-way clutch.

[0019] The pickup driver 26 is connected to the cam 31 through the driving shaft 29 with which the home-position detection filler 28 was fixed. Moreover, the driving shaft 29 is supported free [a revolution] by the brackets 110 and 111 prepared in body 1a of a copying machine 1, a mounting eclipse and this clutch 30 were fixed to this driving shaft 29 by the bracket 111, and the one-way clutch 30 has prevented reversing by the racing torque of the one-way clutch with which the cam 31 was built in the pickup driver 28.

[0020] Moreover, it is detected by the detection sensor 32, a filler 28 consists of photosensors with which this sensor 32 consists of a light emitting device and a photo detector, and when the light irradiated by the photo detector from a light emitting device by the filler 32 is intercepted, it detects that the home-position location of the call koro 10 detects and mentions the rotation location of a cam 31 later.

[0021] Moreover, lever 33a attached in the edge of the pickup driving member 33 is contacted, and a cam 31 is isolated to it. This driving member 33 will be rotated centering on a driving shaft 34, if the same axle top is attached in the feed belt driving shaft 34 which drives the feed belt 11, enabling free sliding as shown in drawing 5 and 6, and a cam 31 contacts lever 33a.

[0022] Moreover, although a driving member 33 does not need to be formed in a driving shaft 34 and the same axle, if it does in this way, it can simplify the configuration of the components of a feed conveyance path, and can raise the clearance nature of the jam manuscript of separation / feeding means 5 conveyance on the street. While the call koro 10 is attached in this driving shaft 33 through the call koro splash member 35, the idle wheel 37 is attached, the idle wheel 37 was connected to gearing 36a attached in the edge of the feed belt driven shaft 36 which drives the feed belt 11 through gearing 10a formed in the edge of the call koro 10, and these gearings 10a, 37, and 36a always mesh.

[0023] Moreover, the call koro 10 has usually fallen caudad with a self-weight, and this condition serves as a location which conveys a manuscript in contact with the manuscript bundle P (refer to drawing 6 (a)). Moreover, if a cam 31 contacts lever 33a, it is the location which rotated centering on the driving shaft 34, and the driving member 33 pushed up the call koro 10 up, and made move it through the splash member 35, and this condition isolated from the manuscript bundle P (refer to drawing 6 (b)).

[0024] Moreover, if the call koro 10 moves to a contact location with a self-weight while lever 33b prepared in the other end of a driving member 33 will be isolated from stopper 38a formed in the bracket 38 which contains the feed belt 11, if the feed koro 10 is made a cam 31, lever 38a will regulate the downward location of the call koro 10 in contact with stopper 38a.

[0025] Moreover, when it descends so that the call koro 10 may contact the manuscript bundle P, the detection sensor 32 detects a filler 28 and a sensor 28 outputs a signal to the Maine controller 21 at this time. The Maine controller 21 is judged to be that to which the call koro 10 was located in the contact location based on this detection information. On the other hand, if the call motor 20 rotates among drawing 2 and 3 in the direction of CW which is a counterclockwise rotation, the stopper gearing 27 will

rotate clockwise through a belt 22 and the pickup input gearing 25. At this time, as for the pickup driver 26, a revolution of the pickup input gearing 25 is transmitted with an one-way clutch.
[0026] The driving shaft 39 is attached in the stopper gearing 27, and the cam 40 and the home-position detection filler 41 are attached in this driving shaft 39. The driving shaft 39 is formed in parallel at the driving shaft 42, and the stopper pawl 14 is attached in the driving shaft 42. Moreover, lever 42a is prepared in the edge of a driving shaft 42, and the contact and isolation of a cam 40 are attained with the revolution of a driving shaft 39 at lever 42a. Lever 42a is pulled by the spring 43, if it is pulled by the spring 43 as shown in drawing 7 (a), will rotate a driving shaft 42 in the predetermined direction, and will move the stopper pawl 14 to the evacuation location isolated from the head of a manuscript.
[0027] Moreover, if a cam 40 pushes in lever 42a in contact with lever 42a, it will move to the regulation location where the rotation shaft 42 resists the pull strength of a spring 43, and moves to the predetermined direction and an opposite direction, and the stopper pawl 14 contacts at the head of the manuscript bundle P in contact with the manuscript tray 4 at this time. A belt 22, a gearing 23, the shank material 24, gearings 23, 26, and 27, a driving shaft 29, the cam 31, the pickup driving member 33, the driving shaft 34, and the driving shaft 39 constitute the transfer device 120 in which the driving force of the call motor 20 is divided and transmitted to two lines from this operation gestalt. The splash member 35 and a cam 40 are formed in the outgoing end of each system of the transfer device 120, and constitute the migration member which moves the call koro 10 and the stopper pawl 14 to contact / isolation location according to actuation of each system of the transfer device 120.
[0028] The detection filler 41 is detected by the filler detection sensor 44, this sensor 44 consists of photosensors which consist of a light emitting device and a photo detector, and when the light irradiated by the photo detector from a light emitting device by the filler 41 is intercepted, detects the rotation location of a cam 40 and outputs a signal to the Maine controller 21. The detection sensor 44 is judged to be what has the stopper pawl 14 in an evacuation location when a signal is outputted to the Maine controller 21 when the stopper pawl 14 is in the evacuation location shown in drawing 7 (a), and this signal inputs the Maine controller 21, and when this signal does not input, it is judged to be what has the stopper pawl 14 in a regulation location.
[0029] Moreover, the feed belt 11 is wound around the feed belt driving shaft 34 and the feed belt driven shaft 36 free [circumference migration], as shown in drawing 5 , and 6 and 8, and this driving shaft 34 and driven shaft 36 are engaging with the bracket 38. Moreover, the tubed part material 45 is inserted in the interior, and, as for the driven shaft 36, Springs 46a and 46b are ****(ed) between the both ends of this tubed part material 45, and a bracket 38. These springs 46a and 46b give fixed tension to the feed belt 11 by forcing on a bracket 38 the bearing 47a and 47b prepared in the both ends of a driven shaft 36 through the feed belt 11 by energizing a driven shaft 36 in the direction isolated from ****** 34.
[0030] Moreover, by contracting Springs 46a and 46b, as tension is not given to the feed belt 11, the feed belt 11, a driving shaft 34, and a driven shaft 36 can be removed from a bracket 38. Moreover, the tubed part material 45 is inserted in rod 35a prepared in the splash member 35, and the call koro 10 moves the splash member 35 by rocking centering on a driving shaft 34 between the location which contacts the manuscript bundle P, and the isolated location.
[0031] Thus, while the stopper pawl 14 moves between an evacuation location and an evacuation location by one call motor 20, the call koro 10 moves between an evacuation location and a contact location. Moreover, the Maine controller 21 drives the call motor 20, and it makes the 1st drive 18 drive so that the call koro 10 may be moved to a contact location if a copy start signal inputs two or more sets from the body of 1 while moving the stopper pawl 14 to an evacuation location.
[0032] On the other hand, as the 2nd drive 19 is shown in drawing 2 , it has the feed motor 48 driven based on the command signal from the Maine controller 21, and the driving force of this feed motor 48 is transmitted to the transfer gearing 55 through a gearing 49, a belt 50, gearings 51 and 52, a belt 53, and a gearing 54, respectively. It has geared with the gearing 56 which transmits driving force to the feed belt driving shaft 34 on this transfer gearing 55, and the one-way clutch is built in this gearing 56.
[0033] Moreover, the gearing 57 with which one-way CHIRATCHI was built in the gearing 55 meshes, and this gearing 57 drives the reverse koro 12 through a gearing 58. Moreover, the transfer gearing 55

drives the pull out actuation koro 13 through gearings 59, 60, 61, 62, 63, and 64. Moreover, clutch 64a is prepared between the pull out actuation koro 13 and a gearing 64, and this clutch 64a is based on a command signal from the Maine controller 21, and transmits and intercepts the driving force from a gearing 64 to the pull out actuation koro 13. In addition, the one-way clutch is built in the gearing 59. Moreover, a thin arrow head shows transfer of driving force when the call motor 20 rotates in the direction of CW among drawing 2 , and a thick arrow head shows transfer of driving force when the call motor 20 rotates in the direction of CCW.

[0034] Moreover, the Maine controller 21 drives the feed motor 48 based on the detection information from the manuscript set sensor 15, the pull out sensor 16, and the resist sensor 17. In addition, this pull out sensor 16 continues crosswise [of a manuscript], is formed, and can also detect the crosswise die length of a manuscript. [two or more] When the copy start signal inputted two or more sets from the body of 1 and it specifically detects that the Maine controller 21 has the manuscript bundle P on the manuscript tray 4, after driving the call motor 20 in the direction of CW and moving the stopper pawl 14 to an evacuation location, the call motor 20 is driven in the direction of CCW, and the 1st drive 18 is made to drive so that the call koro 10 may be moved to a contact location.

[0035] If the feed motor 48 rotates succeedingly in this actuation in the direction of CW which is the direction of a counter clockwise, this turning effort will be transmitted to the transfer gearing 55 through a gearing 49, a belt 50, gearings 51 and 52, a belt 53, and a gearing 54, and the transfer gearing 55 will rotate counterclockwise. When rotating in this direction, a gearing 56 rotates and circumference migration of the feed belt 11 is carried out clockwise. Moreover, since a gearing 57 also rotates when the transfer gearing 55 rotates counterclockwise, this revolution is transmitted to the reverse koro 12 through a gearing 58, and the reverse koro 12 rotates counterclockwise.

[0036] For this reason, in order that the reverse koro 12 may move in the feed inhibition direction while the feed belt 11 carries out circumference migration in the feed direction of a manuscript after feeding of the manuscript bundle P is started by the call koro 10 which driving force is delivered from the feed belt driving shaft 34, ****** located in the most significant is separated from the manuscript bundle P to which paper was fed. Moreover, since driving force is transmitted to the pull out actuation koro 13 through gearings 59, 60, 61, 58, 62, 63, and 64 from the transfer gearing 55, paper is fed to the manuscript with which the pull out actuation koro 13 rotated counterclockwise, and was separated by this koro 13 and the pull out follower koro 13a and 13b.

[0037] If the head of this manuscript is detected by the pull out sensor 16, after driving the call motor 20 in the direction of CCW and moving the call koro 10 to an evacuation location, the feed motor 48 is driven in the direction of CW which is a clockwise rotation. Since the transfer gearing 55 rotates clockwise at this time, the revolution from the transfer gearing 55 is not transmitted, but, as for gearings 56 and 57, the feed belt 11 is suspended by the one-way clutch. However, he conveys a manuscript toward contact glass 2 by the pull out actuation koro 13, the transfer gearing 55 preventing separation of the manuscript which follows by the reverse koro 12, since he drives the reverse koro 12 through gearings 59, 60, 61, and 58, while driving the pull out actuation koro 13 through gearings 59, 60, 61, 62, 63, and 64.

[0038] A manuscript is conveyed by this contact glass 6 with carrying-in / taking-out means 6. This carrying-in / taking-out means 6 has the conveyance belt 65, and this conveyance belt 65 is wound around the conveyance belt driving roller 66 and the conveyance belt follower roller 67. The conveyance belt driving roller 66 is driven with the 3rd drive 68. This 3rd drive 68 has the conveyance belt motor 69, this motor 69 is driven by the Maine controller 21, driving force is transmitted to the conveyance belt driving roller 66 through a gearing 70, a belt 71, gearings 72 and 73, a belt 74, and a gearing 75, and the conveyance belt driving roller 66 carries out the conveyance belt 65 forward and counterrotation in connection with forward and counterrotation of a motor 69.

[0039] This carrying-in / taking-out means 6 makes the forward revolution of the conveyance belt motor 69 carry out in the direction of CCW which is a counterclockwise rotation with the command signal from the Maine controller 21, when the feed motor 48 carries out counterrotation in the direction of CCW and suspends actuation of the feed belt 11. For this reason, the manuscript from which the

conveyance belt 65 was separated by carrying out a forward revolution by the 3rd drive 68 is carried in on contact glass 2. And when the back end of the manuscript carried in to contact glass 2 is detected by the resist sensor 17, the exposure location of contact glass 2 is made to suspend a manuscript, when only a predetermined pulse carries out normal rotation actuation of the conveyance belt motor 69 from this detection event.

[0040] And actuation of the feed motor 48 and the conveyance belt motor 69 is suspended at this time. After the manuscript which follows from the manuscript with which the feed motor 48 drove in the direction of CW again, and was laid on the manuscript tray 4 next is separated, when the resist sensor 17 detects the head of this manuscript and only a predetermined pulse is conveyed from this detection event, actuation of the feed motor 48 is suspended, the manuscript which follows withdraws in advance, and actuation is performed.

[0041] On the other hand, when a manuscript stops in the exposure location of contact glass 2, read of a manuscript and exposure are performed by the copying machine 1. Since a signal is inputted into the Maine controller 21 from a copying machine 1 after this read and exposure are completed, if this signal inputs a controller 21, a manuscript will be taken out by the delivery means 7 from contact glass 2 by carrying out normal rotation actuation of the conveyance belt motor 69 again.

[0042] In the delivery means 7, the reversal actuation koro 81, the delivery actuation koro 87, and the 1st and 2 change pawls 85 and 86 drive by the 4th drive 90 from the reversal actuation koro 81, the delivery follower koro 82, the reversal guide koro 83, the reversal follower koro 84, the 1st change-over pawl 85, the 2nd change-over pawl 86, the delivery actuation koro 87, the delivery follower koro 88, and the delivery sensors 89a and 89b. The 4th drive 90 has the delivery motor 91 driven with the command signal from the Maine controller 21, and the gearing 92 is connected to output-shaft 91a of this delivery motor 91 through belt 91b. This gearing 92 transmits driving force to gearings 93, 94, and 95 through a belt 96, respectively, and the reversal actuation koro 81 and the delivery actuation koro 87 are connected to gearings 95 and 96, respectively.

[0043] Moreover, while the 1st change pawl 85 is rocked by the 1st solenoid 97, the 2nd change pawl 86 is rocked by the 2nd solenoid 98, and ON/OFF of these the 1st and 2 solenoids 97 and 98 is carried out by the command signal from the Maine controller 21. Specifically, the 1st change-over pawl 85 is in the condition [having stood by in the home BOJISHON location (the underside of the change-over pawl 85 constituting a part of conveyance way of a manuscript) which opens contact glass 2 and the 1st paper output tray 8 for free passage by the 1st solenoid 97 at the time of the delivery of an one.side manuscript].

[0044] The Maine controller 21 makes driving the conveyance belt motor 69 after the read of a manuscript, and termination of exposure, and coincidence drive the delivery motor 91 while making the 1st change-over pawl 85 stand by in a home-position location, without driving the 1st solenoid 97 at the time of the one side mode in which the usual one side manuscript is conveyed. For this reason, paper is linearly delivered to the manuscript pinched by the reversal actuation koro 81 and the reversal follower koro 82, without a table rear face being reversed by the 1st paper output tray 8.

[0045] When double-sided mode is specified on the other hand by the control unit by which the Maine controller 21 was formed in the copying machine 1 and which is not illustrated, By driving the 1st solenoid 97, while making it move to the location which opens contact glass 2 and the reversal path 101 for free passage from a home-position location (the top face of the change-over pawl 85 constitutes a part of conveyance way of a manuscript as shown in drawing 1), the 1st change-over pawl 85 Driving the conveyance belt motor 69 after the read of one side of a double-sided manuscript and termination of exposure and coincidence are made to drive the delivery motor 91. For this reason, a manuscript is guided at the reversal path 101 pinched by the reversal actuation koro 81 and the delivery follower koro 82, and is conveyed by the reversal guide koro 83 toward the 2nd change-over pawl 86.

[0046] The 2nd change-over pawl 86 drives by the 2nd solenoid 98, and in case the manuscript which the read of one side ended is taken out from contact glass 2, it switches to the home BOJISHON location (as shown in drawing 1 , the underside of the 2nd change-over pawl 86 constitutes a part of conveyance way of a manuscript) which opens for free passage the reversal path 101 and the return path 102

established between contact glass 2, without driving by the 2nd solenoid 98.
[0047] For this reason, after the manuscript taken out from contact glass 2 is conveyed by the reversal path 101 with the 1st change-over pawl 85, by the 2nd change-over pawl 86, after the table rear face has been reversed by the return path 102, it is pinched by the reversal actuation koro 81 and reversal follower koro 84b, and is returned to contact glass 2. If the head of a manuscript is detected by delivery sensor 89b prepared on the reversal path 101 The Maine controller 21 carries out inversion actuation of the conveyance belt motor 69, and carries out inversion actuation of the conveyance belt 65. When the revolution pulse of the conveyance belt motor 69 from the event of the head of a manuscript being detected by delivery sensor 89b reaches a predetermined value, it is judged as what conveyed the manuscript in the exposure location on contact glass 2, and the conveyance belt motor 102 is stopped.
[0048] Since a signal is inputted into a controller 21 from a copying machine 1 after the read of a manuscript and exposure are completed in an exposure location, If this signal inputs a controller 21, normal rotation actuation of the conveyance belt motor 69 will be carried out. Furthermore, while actuation of the 2nd solenoid 98 is suspended while driving the 1st solenoid 97, and making contact glass 2 and the reversal path 101 open for free passage with the 1st change-over pawl 85 By making the return path 102 and the 2nd paper output tray 9 open for free passage with the 2nd change-over pawl 86, (The upper part of the 2nd change-over pawl 86 constitutes a part of conveyance way of a manuscript) After the manuscript taken out from contact glass 2 is pinched and conveyed by the reversal actuation koro 81 and the reversal follower koro 82, it is pinched by the delivery actuation koro 87 and the delivery follower koro 88, and paper is delivered to it on the 2nd paper output tray 9.
[0049] On the other hand, the manuscript set sensor 15 mentioned above, the pull out sensor 16, and the resist sensor 17 constitute a manuscript detection means to detect the existence of the manuscript on the conveyance way 105 of the manuscript containing the manuscript tray 4, and the Maine controller 21 constitutes the control means which controls migration of the stopper pawl 14 based on the detection information from these manuscript set sensor 15, the pull out sensor 16, and the resist sensor 17.
[0050] When the Maine controller 21 specifically has a manuscript on the conveyance way 105 of the manuscript tray 4 and separation / feeding means 5 at the time of the charge of the power source of a copying machine 1, When it is detected that the stopper pawl 14 is located in a regulation location based on the detection information from the filler detection sensor 44 The call motor 20 is driven, the stopper pawl 14 is moved to an evacuation location with the 1st drive 18, and when it is detected that the stopper pawl 14 is located in an evacuation location, control which locates the stopper pawl 14 in an evacuation location as it is is performed.
[0051] Moreover, with this operation gestalt, the closing motion covering 103 which can be opened and closed freely is formed in separation / feeding means 5 side of body 3a of ADF3 to body 3a so that the conveyance way 105 on separation / feeding means 5 may be exposed and blockaded. The closing motion covering detection sensor 104 which detects the switching condition of this closing motion covering 3 to body 3a near the covering 103, and outputs detection information to the Maine controller 21 is formed, and this sensor 104 consists of a photosensor, a touch sensor, etc. In addition, the pull out follower koro 13a and 13b is attached in the closing motion covering 103 free [a revolution].
[0052] And while the Maine controller 21 detects that the closing motion covering 103 was opened based on the detection information from a sensor 104 When the stopper pawl 14 detects being located in a regulation location irrespective of the existence of the manuscript on the conveyance way 105 of the manuscript tray 4 and separation / feeding means 5 The stopper pawl 14 is moved to an evacuation location, and when it is detected that the stopper pawl 14 is located in an evacuation location, the stopper pawl 14 is located in an evacuation location as it is.
[0053] Moreover, while detecting what the closing motion covering 103 closed based on detection information from the sensor 104 When it detects that there is no manuscript on the conveyance way 105 of the manuscript tray 4 and separation / feeding means 5 and the stopper pawl 14 detects being located in an evacuation location The stopper pawl 14 is moved to a regulation location, and when it is detected that the stopper pawl 14 is located in a regulation location, the stopper pawl 14 is located in a regulation location as it is.

[0054] Moreover, while detecting what the closing motion covering 103 closed based on the detection information from a sensor 104 When it detects that a manuscript is on the conveyance way 105 of the manuscript tray 4 and separation / feeding means 4 and the stopper pawl 14 detects being located in a regulation location The stopper pawl 14 is moved to an evacuation location, and when it is detected that the stopper pawl 14 is located in an evacuation location, the stopper pawl 14 is located in an evacuation location as it is.

[0055] Next, based on the flow chart shown in drawing 9 -14, conveyance actuation of a manuscript and position control actuation of the stopper pawl 14 of this operation gestalt are explained. In addition, this flow chart is the feed actuation program prepared in the Maine controller 21. Moreover, conveyance actuation of an one side manuscript is explained here. First, the manuscript bundle P is laid on the manuscript tray 4, and if the print key prepared in the control unit of a copying machine 1 is pressed and a feed signal is transmitted to the Maine controller 21 from the body of a copying machine 1, the program of the Maine controller 21 will shift to a feed actuation routine.

[0056] First, in drawing 9 , when it distinguishes whether the number of the manuscripts to which paper is fed is the 1st (step S1) and it is judged to be that whose number is the 1st, while making feed clutch 64a turn on, the call motor 20 is rotated in the direction of CW (step S2). If the call motor 20 is rotated in the direction of CW which is a counterclockwise rotation, the stopper gearing 27 will rotate clockwise through a belt 22 and the pickup input gearing 25. At this time, as for the pickup driver 26, a revolution of the pickup input gearing 25 is transmitted with an one-way clutch.

[0057] When the stopper gearing 27 rotates, it is made to move to the evacuation location which a cam 40 is isolated from lever 42a, and isolates the stopper pawl 14 from the head of a manuscript as lever 42a is pulled by the spring 43, a driving shaft 42 is rotated in the predetermined direction and it is shown in drawing 7 (a). And it judges it to be what moved to the evacuation location when it distinguished (step S3) and the detection filler 41 was detected by the filler detection sensor 44 whether the stopper pawl 14 moved to the evacuation location, and inversion actuation of the call motor 20 is carried out in the direction of CCW (step S4). At this time, driving force is transmitted to the pickup driver 26 through a belt 22 and the pickup input gearing 25 from the call motor 20. At this time, as for the stop gearing 27, a revolution of the pickup input gearing 25 is not transmitted with an one-way clutch.

[0058] Subsequently, if the pickup driver 26 rotates, it will be isolated from lever 33a of the pickup driving shaft 33 by the cam 31, and the call koro 10 will be moved to the contact location which contacts the manuscript bundle P with a self-weight. It judges it to be what the call koro 10 moved to the contact location when it distinguished (step S5) and the detection filler 28 was detected by the filler detection sensor 32 whether, at this time, the stopper pawl 10 moved to the contact location, and actuation of the call motor 20 is suspended (step S6).

[0059] Subsequently, the feed motor 48 and the conveyance belt motor 69 are rotated in the direction of CCW. (Step S7) . After paper is fed to the manuscript bundle P by the call koro 10 at this time, the manuscript located in the most significant is separated from the manuscript bundle P by the feed belt 11 and the reverse koro 12, and this separated manuscript is conveyed by the pull out actuation koro 13 toward contact glass 2.

[0060] Subsequently, when it does not distinguish and (step S8) turn on whether the head of a manuscript was detected by the pull out sensor 16, having been set to jam detection distinguishes whether carried out predetermined time progress (step S9). And even if it carries out predetermined time progress, when the head of a manuscript is not detected, jam detection is performed as that to which a manuscript has not reached the pull out sensor 16, and feed actuation is interrupted (step S10). On the other hand, when the head of a manuscript is detected by the pull out sensor 16 at step S8, while carrying out inversion actuation of the feed motor 48, the call motor 20 is driven in the direction of CCW (step S11).

[0061] At this time, driving force is transmitted only to the pull out driving roller 13 and the reverse koro 12, and a manuscript is conveyed by the pull out follower koro 13 toward contact glass 2, without performing separation of the manuscript mentioned later, without transmitting driving force to the feed belt 11 by the 2nd drive 19. Moreover, if the call motor 20 is driven in the direction of CCW, in contact

with lever 33a, a driving member 33 rotates centering on a driving shaft 34, and a cam 31 will push up the call koro 10 up through the splash member 35, will make it move, and will move the call koro 10 to the evacuation location isolated from the manuscript bundle P to the upper part.

[0062] Subsequently, when it distinguishes whether the call koro 10 moved to the evacuation location based on the detection information from the filler detection sensor 32 (step S12) and the call koro 10 moves to an evacuation location, actuation of the call motor 20 is suspended (step S13). Subsequently, it distinguishes whether the resist sensor 17 turned on, and when the resist sensor 17 does not turn on, having been set to jam detection distinguishes whether carried out predetermined time progress (step S15).

[0063] And even if it carries out predetermined time progress, when the head of a manuscript is not detected, jam detection is performed as that to which a manuscript has not reached the resist sensor 17, and feed actuation is interrupted (step S16). the case where the head of a manuscript is detected by the resist sensor 17 at step S14 on the other hand -- the feed motor 48 -- accelerating actuation -- carrying out -- up to a rotational frequency equivalent to the conveyance belt motor 69 -- top ** -- last (step S17) .

[0064] Subsequently, after transmitting the crosswise die length of a manuscript to a copying machine 1 based on the detection information from the pull out sensor 16 (step S18), it distinguishes whether the pull out sensor 16 turned off (step S19), and when the pull out sensor 16 does not turn off, having been set to jam detection distinguishes whether carried out predetermined time progress (step S20). And even if it carries out predetermined time progress, when a manuscript continues being detected, jam detection is performed as that to which the manuscript piled up around pull out sensor 16, and feed actuation is interrupted (step S21).

[0065] On the other hand, when the back end of a manuscript is detected by the pull out sensor 16 at step S19, based on the manuscript order edge detection information by the pull out sensor 16, the die-length information on a manuscript is transmitted to a copying machine 1 side (step S22). Subsequently, as shown in drawing 10, when it is not distinguished and (step S23) turned off whether the resist sensor 17 turned off, having been set to jam detection distinguishes whether carried out predetermined time progress (step S24).

[0066] And even if it carries out predetermined time progress, when a manuscript continues being detected, jam detection is performed as that to which the manuscript piled up around resist sensor 17, and feed actuation is interrupted (step S25). On the other hand, when the resist sensor 17 is OFF at step S23, resist back end interrupt processing is performed (step S26). This actuation is actuation which makes the exposure location of contact glass 2 suspend a manuscript, when only a predetermined pulse carries out normal rotation actuation of the conveyance belt motor 69 from the event of the back end of a manuscript being detected by the resist sensor 17.

[0067] Subsequently, when it distinguishes whether there is degree manuscript (S28) and degree manuscript cannot be found after transmitting the stop signal of a manuscript to a copying machine 1 (step S27), feed clutch 64a is turned off and the call motor 20 is driven in the direction of CW (step S29). At this time, when a cam 40 resists the pull strength of a spring 43 and pushes in lever 42a, as shown in drawing 7 (b), a driving shaft 42 rotates and the stopper pawl 14 moves to a regulation location from an evacuation location.

[0068] Subsequently, it judges it to be what moved to the evacuation location when it distinguished (step S30) and the detection filler 41 was no longer detected by the filler detection sensor 44 whether the stopper pawl 14 moved to the regulation location, the call motor 20 is suspended, and processing (step S31) is ended. On the other hand, when there is degree manuscript at step S28, it shows and withdraws in advance to drawing 11, and actuation is performed. In drawing 10, first, the call motor 20 is moved in the direction of CCW (step S41), and the call koro 10 is moved to a contact location. Subsequently, it distinguishes whether based on the detection information from the filler detection sensor 32, the call koro 10 moved to the contact location (step S42). When it moves, while suspending actuation of the call motor 20, the feed motor 48 is rotated in the direction of CCW, the call koro 10, the conveyance belt 11, the reverse koro 12, and the pull out actuation koro 13 are driven, and the manuscript on the manuscript

(step S43) tray 4 is separated.
[0069] Subsequently, when it is distinguished and (step S45) detected whether the head of the manuscript of a manuscript was detected by the resist sensor 17, inversion actuation of the feed motor 48 is carried out (step S45). Subsequently, revolution actuation of the call motor 20 is carried out in the direction of CCW. For this reason, while the call koro 10 moves to an evacuation location, a manuscript is conveyed by the driving force of only the pull out driving roller 13. Subsequently, when it judges it to be what distinguished (S47) and moved to the evacuation location whether the call koro 10 moved to the evacuation location based on the detection information from the filler detection sensor 32, actuation of the call motor 20 is suspended (step S48).
[0070] Subsequently, it stands by until suspend actuation of the feed motor 69, a manuscript (step S50) withdraws in advance, it ends actuation and a feed signal inputs from a copying machine 1, when it is distinguished and (step S49) detected whether the resist sensor 17 detected the head of a manuscript. Moreover, when the number of manuscripts is not the 1st at step S1, while progressing to step S51 of drawing 9 and rotating the feed motor 48 in the direction of CW, the conveyance belt motor 69 is rotated in the direction of CCW, the manuscript which is withdrawing in advance and standing by is conveyed in the exposure location of contact glass 2, and it shifts to processing of step S17.
[0071] Termination of this the actuation of a series of distinguishes whether the manuscript was conveyed by contact glass 2 as shown in drawing 12 (step S52). If a manuscript is conveyed by contact glass 2 and exposure is performed at this time, since a flag will be set in the memory which is not illustrated, based on this memory information, it distinguishes whether it is finishing [conveyance]. When finishing [conveyance], after driving the conveyance belt motor 69 and the delivery motor 91 (step S53) and taking out a manuscript from on contact glass 2 with the conveyance belt 65, by the conveyance actuation koro 81 and the reversal follower koro 82, a manuscript is pinched and a manuscript is conveyed.
[0072] Subsequently, when delivery sensor 89a distinguishes (step S54) and does not detect whether the head of a manuscript was detected, having been set to jam detection distinguishes whether carried out predetermined time progress (step S55). And even if it carries out predetermined time progress, when the head of a manuscript is not detected, jam detection is performed as that to which a manuscript has not reached delivery sensor 89a, and feed actuation is interrupted (step S56).
[0073] Moreover, when predetermined-time progress has not been carried out at step S55, it distinguishes whether it is a halt of the manuscript by the feed actuation in which the conveyance belt motor 69 is performed in parallel to delivery actuation in the case of a small size manuscript (step S57), and since two or more manuscripts may not be discharged together with the contact glass 2 top, in affirmation, actuation of the delivery motor 91 is suspended, and processing (step S58) is ended to it.
[0074] On the other hand, when the delivery sensor 89 turns on at step S54 After carrying out a delivery slowdown counter clearance (step S59), based on the driving pulse of the conveyance belt motor 69, it calculates having conveyed the distance deducted the specified quantity (this operation gestalt 15mm) rather than the die length according to the size from the head of a manuscript. While the back end section of a manuscript is pinched by the reversal actuation koro 81 and the reversal follower koro 82 so that paper may be delivered to a manuscript on the 1st paper output tray 8 and starting a slowdown of the delivery motor 91, actuation of the delivery motor 91 is suspended (steps S60 and S61).
[0075] Subsequently, when it is not distinguished and (step S62) turned off whether the delivery sensor 89 turned off, having been set to jam detection distinguishes whether carried out predetermined time progress (step S63). And even if it carries out predetermined time progress, when a manuscript continues being detected, jam detection is performed as that to which the manuscript piled up around delivery sensor 89a, and feed actuation is interrupted (step S64).
[0076] On the other hand, when the delivery sensor 89 turns off, it progresses to the flow of drawing 13, and (step S65), when predetermined time progress is carried out, after distinguishing whether predetermined time progress was carried out after the slowdown of the delivery motor 91, and transmitting the completion signal of delivery to a copying machine 1 (step S66), actuation is suspended for the delivery motor 91 and processing is ended. Next, based on drawing 14, position control actuation

of the stopper pawl 14 is explained.
[0077] First, it distinguishes whether the power source of a copying machine 1 was switched on and the power source was supplied to ADF3 (step S71), and at this time, since the location of the stopper pawl 14 is unknown, the location of the stopper pawl 14 is checked for initial setting out. That is, when ****** [immediately after the charge of a power source] is distinguished at step S71 and it is judged as that which is immediately after powering on, it shifts to A of drawing 9 .
[0078] After performing processing of A, it distinguishes whether based on the detection information from the manuscript set sensor 15, the pull out sensor 16, and the resist sensor 17, a manuscript is on the conveyance way 105 of separation / feeding means 5, and the manuscript tray 4 (step S73). And when it is judged as a thing without a manuscript, it distinguishes whether the stopper pawl 14 is in an evacuation location based on the detection information from the filler detection sensor 44 (step S74).
[0079] When it is judged as what does not have the stopper pawl 14 in an evacuation location at this time Since the stopper pawl 14 is in a regulation location, when it is judged as what considers as a location as it is and is in an evacuation location It distinguishes whether the call motor 20 was driven in the direction of CCW, the stopper pawl 14 was moved toward the regulation location (step S75), and the stopper pawl 14 moved to the regulation location based on the detection information from the filler detection sensor 44 (step S76). And when it is judged as what the stopper pawl 14 moved to the regulation location, actuation of the call motor 20 is suspended (step S77).
[0080] On the other hand, when it is judged as what has a manuscript at step S73, it distinguishes whether the stopper pawl 14 is in a regulation location based on the detection information from the filler detection sensor 44 (step S79). When it is judged as what does not have the stopper pawl 14 in a regulation location here Since the stopper pawl 14 is in an evacuation location, when it is judged as what considers as a location as it is and has the stopper pawl 14 in a regulation location It distinguishes whether the call motor 20 was driven in the direction of CCW, the stopper pawl 14 was moved toward the evacuation location (step S80), and the stopper pawl 14 moved to the evacuation location based on the detection information from the filler detection sensor 44 (step S81).
[0081] When the stopper pawl 14 judges it as what was located in the evacuation location, actuation of the call motor 20 is suspended (step S82). Thus, when a manuscript is on the conveyance way 105 of the manuscript tray 4 and separation / feeding means 5 at the time of the charge of a power source, When it is detected that the stopper pawl 14 is located in a regulation location based on the detection information from the filler detection sensor 44 When it is detected that drive the call motor 20, move the stopper pawl 14 to an evacuation location with the 1st drive 18, and the stopper pawl 14 is located in an evacuation location In order to perform control in which the stopper pawl 14 is located in an evacuation location as it is, While being able to prevent that a manuscript is caught in the stopper pawl 14 irrespective of the existence of a jam manuscript at the time of the charge of a power source and being able to remove a manuscript easily, it can prevent that the stopper pawl 14 collides with a manuscript and damages a manuscript.
[0082] It distinguishes whether on the other hand, when an initial was set up at step S71, based on the detection information from the closing motion sensor 104, the feed covering 103 was opened and blockaded in the state of energization, and only when covering 103 will be from an open condition in a closed state, processing after step S73 is performed. Namely, while detecting what the closing motion covering 103 closed based on detection information from the sensor 104 When it detects that there is no manuscript on the conveyance way 105 of the manuscript tray 4 and separation / feeding means 5 and the stopper pawl 14 detects being located in an evacuation location When it is detected that move the stopper pawl 14 to a regulation location, and the stopper pawl 14 is located in a regulation location Since it was made to locate the stopper pawl 14 in a regulation location as it is, when the closing motion covering 103 is closed after clearance of a jam manuscript When there is no manuscript on the conveyance way 105 of the manuscript containing the manuscript tray 4, the stopper pawl 14 can be moved to a regulation location, and a manuscript can be easily set to the manuscript tray 4.
[0083] Moreover, when a manuscript is laid under the stopper pawl 14 after clearance of a jam manuscript, while it can prevent changing the stopper pawl 14 into a condition [that you made it located

in an evacuation location freely], and the stopper pawl 14 colliding with a manuscript, and damaging a manuscript, when it is judged as that to which the closing-motion covering 103 changed into the open condition from the closed state at step S78, processing after step S79 is performed.

[0084] Namely, while detecting that the closing motion covering 103 was opened based on detection information from the sensor 104 When the stopper pawl 14 detects being located in a regulation location irrespective of the existence of the manuscript on the conveyance way 105 of the manuscript tray 4 and separation / feeding means 5 When it is detected that move the stopper pawl 14 to an evacuation location, and the stopper pawl 14 is located in an evacuation location In order to locate the stopper pawl 14 in an evacuation location as it is, Even when the manuscript on the conveyance way 105 containing the manuscript tray 4 is small at the time of disconnection of the closing motion covering 103 and detection is difficult for it, by moving the stopper pawl 14 to an evacuation location A manuscript is easily removable while being able to prevent that the stopper pawl 14 collides with a manuscript and damages a manuscript.

[0085] As explained above, with this operation gestalt, the 1st one drive 18 driven so that the call koro 10 and the stopper pawl 14 may be moved to contact / isolation location is formed. This 1st drive 18 The call motor 20, The transfer device 120 in which the driving force of this call motor 20 is divided and transmitted to two lines, Since it constituted from the splash member 35 and cam 40 which it is prepared [cam] in the outgoing end of each system of the transfer device 120, and move the call koro 10 and the stopper pawl 14 to contact / isolation location according to actuation of each system of the transfer device 120, It can prevent that can set a driving source to one, prevent that the components mark of the 1st drive 18 increase, and the manufacturing cost of ADF3 increases.

[0086] Moreover, in case the call motor 20 rotates in the direction of CW, while the driving force of the call motor 20 is transmitted, one system (drive system after a gearing 27) of the transfer device 120 The system (gearing 26 side) of another side of the transfer device 120 is constituted so that the driving force of the call motor 20 may be transmitted, in case the call motor 20 rotates in the direction of CCW. In order to switch the location of the call koro 10 and the stopper pawl 14 in connection with the forward counterrotation of the call motor 20, in connection with the forward counterrotation of the call motor 20, the call koro 10 and the stopper pawl 14 can be driven. For this reason, the call koro 10 and the stopper pawl 14 can be driven with the easy configuration which has one call motor 20.

[0087] Moreover, the transfer device 120 equips the location which branches the driving force of the call motor 20 for each system with 26 which has an one-way clutch, and 27. In case the call motor 20 rotates in the direction of CW, while rotating a gearing 27 and transmitting driving force to the stopper pawl 14 In case driving force is not transmitted to the call koro 10, without rotating a gearing 26 and the call motor 20 rotates in the direction of CCW, while rotating a gearing 26 and transmitting driving force to the call koro 10 Since it was made not to transmit driving force to the stopper pawl 14, without rotating a gearing 27, It can switch transmitting the driving force of the call motor 20 to the call koro 10 or the stopper pawl 14 by using the gearings 26 and 27 which have an one-way clutch as a transfer device 120. The 1st drive 18 can be simplified and only the part can reduce the manufacturing cost of ADF3.

[0088] Furthermore, since it prepared on the feed belt driving shaft 34 and this alignment, the part 33, i.e., the pickup driving member, of the member which constitutes the transfer device 120 until it results [from the call motor 20] in the call koro 10, while being able to simplify the configuration of the 1st drive 18, it can make it unnecessary to secure the excessive tooth space for installing the transfer device 120. Moreover, since the new member for supporting a part of transfer device 120 becomes unnecessary, it can prevent that the conveyance way 105 is covered with a new member, and can prevent causing trouble to the activity which removes a jam manuscript from the conveyance way 105.

[0089]

[Effect of the Invention] According to invention according to claim 1, it can prevent that can set a driving source to one as a transfer device divides the driving force of one drive motor into two lines and it transmits to a feed member and specification-part material, and prevent that the components mark of a driving means increase, and the manufacturing cost of an automatic manuscript transport device increases.

[0090] According to invention according to claim 2, since a feed member and specification-part material can be driven in connection with the forward counterrotation of a drive motor, a feed member and specification-part material can be driven with the easy configuration which has one drive motor. According to invention according to claim 3, it can switch transmitting the driving force of a drive motor to a feed member or specification-part material by using the gearing which has an one-way clutch as a transfer device, a driving means can be simplified, and only the part can reduce the manufacturing cost of an automatic manuscript transport device.

[0091] While being able to simplify the configuration of a driving means by it being arranged near the feed member and preparing a part of member which constitutes a transfer device on the existing conveyance member and this alignment according to invention according to claim 4, it can make it unnecessary to secure the excessive tooth space for installing a transfer device. Moreover, since the new member for supporting a part of transfer device becomes unnecessary, it can prevent that the feed path of a manuscript etc. is covered with a new member, and can prevent causing trouble to the activity which removes a jam manuscript from a feed path.

[Translation done.]